

Does high cholesterol lead to more severe COVID-19 infection?

An abstract by Hao Wang & others revealed that when they loaded cells with cholesterol from blood serum using transport in apolipoprotein E this enhanced the endocytic entry of SARS-CoV-2. High definition super resolution imaging of the SARS-CoV-2 entry points with high cholesterol showed almost twice the total number of viral entry points.

The cholesterol also trafficked the angiotensin converting enzyme ACE2 to the viral entry site which is where the SARS-CoV-2 docks to exploit entry into the cell.

Cholesterol also increased binding of the SARS-CoV-2 receptor binding domains.

They found in mice that age and a high fat diet induced cholesterol loading into the lung tissue by up to 40%. Based on these findings they proposed a cholesterol dependent model for COVID-19 mortality in the elderly and the chronically ill.

They surmised that as cholesterol increases with age and inflammation (e.g. in those who are obese, smoke and have diabetes) the cell surfaces coated the viral entry points. Importantly their models showed that the problems arose when cholesterol levels were high in tissues not the blood.

Conversely rapidly dropping cholesterol in the blood might indicate a severe loading of cholesterol and peripheral tissues and a more dangerous situation for escalated SARS-CoV-2 infectivity. They went on to surmise that molecules that removed cholesterol from tissue would disrupt the ACE2 localisation with viral entry points were more likely to reduce the severity of COVID-19 in critically ill patients.

Should we then all be taking statins?

LGP, the home of The London General Practice and London Global Practice has kept abreast with all aspects of COVID-19 disease including diagnosis, treatment and management.

We are happy to undertake video consultations on any medical matters and also happy to see patients face-to-face when we are wearing full PPE and so long as the patient does not have acute COVID symptoms. Please do not hesitate to get in contact should you have any medical needs.

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